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*RESEARCH ARTICLE*

# A STUDY TO ASSESS THE EFFECTIVENESS OF VIDEO ASSISTED TEACHING REGARDING KNOWLEDGE ABOUT WARM CHAIN PRACTICES ON PREVENTION OF HYPOTHERMIA IN NEWBORN AMONG STAFF NURSES IN SELECTED HOSPITAL AT COIMBATORE

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## *Abstract*

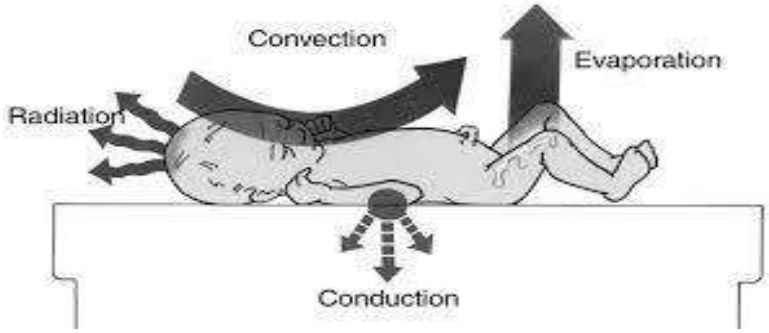
Neonatal hypothermia is a major contributor to neonatal morbidity and mortality, especially indeveloping countries. Maintaining thermal stabil ity through proper warm chain practices is essential for the survival and wellbeing of newborns,and staff nurses play a key role in implementing these practices. This study aimed to assess the existing knowledge of staff nurses regarding warm chain practices for prevention of neonatal hypothermia, evaluate the effectiveness of video assisted teaching by comparing pre-test and post-test scores, and determine the association between pre-test knowledge and selected demographic variables. A quantitative quasi-experimental one group pre-test and post-test design was adopted among 100 staff nurses selected through purposive sampling from selected hospitals in Coimbatore. Data were collected using a structured knowledge questionnaire. Video assisted teaching was administered after the pre-test and the post-test was conducted on the 15th day. The mean pre- test knowledge score was 5.9 ± 1.4 and the mean post-test score was 15.8 ± 3, with a mean difference of 10. The calculated paired ‘t’ value was 33, which was statistically significant at p < 0.05, indicating the effectiveness of the intervention. Significant association was found between knowledge and age and NICU experience, while no significant association was observed with other demographic variables. The study concluded that video assisted teaching was highly effective in improving staff nurses’ knowledge regarding warm chain practices for prevention of neonatal hypothermia.



## Introduction:-

Neonatal hypothermia occurs when the newborn’s temperature drops below 365°C (97.70F): 36-36.5°C (96.8-97.7°F) is mild hypothermia (cold stress); 32-36°C (89.6-96.8°F) is moderate hypothermia; less than 32°C (89.6°F) is severe hypothermia. Hypothermic newborns must be rewarmed as quickly as possible by skin-to-skin contact depending on the availability of staff and equipment and the severity of the hypothermia.Hyperthermia is as dangerous to the newborn as hypothermia and can be prevented by dressing the baby appropriately for the

environmental temperature and not placing it too close to a source of heat or in full sunlight. In particular, incubators should not be exposed to direct sunlight and the temperature inside the device as well as the baby's own temperature should be monitored frequently.Thermoregulation is the ability to maintain balance between heat production and heat loss in order to sustain body temperature. Hypothermia may have serious metabolic consequences for all newborns. To minimize these effects, an environmental temperature at which the new born has minimal rates of oxygen consumption and expends the least energy to maintain its temperature is needed.




The "warm chain" is a set of interlinked procedures to be taken at birth and during the next few hours and days in order to minimize heat loss in all newborns. Failure to implement any one of these procedures will break the chain and put the newborn baby at risk of getting cold.

**The ten steps are:-**
1. warm delivery room,
2. Immediate drying,
3. Skin-to-skin contact
4. Breast Feeding,
5.Bathing and weighing postponed,
6.Appropriate clothing and bedding.
8.Warm transportation.
9.Warm resuscitation .
10.Training/awareness raising.

## Material and Methods:-

For the present study, a quantitative research approach with a quasi-experimental one group pre-test and post-test design was adopted to assess the effectiveness of video assisted teaching on knowledge regarding warm chain practices on prevention of hypothermia in newborns among staff nurses. The study was conducted in selected hospitals of Coimbatore, namely Sai Hospital (Nachipalayam), Surya Hospital (Ganapathy), Kavitha Hospital (Sundarapuram), and Shree Siva Hospital (Ganapathy). Formal permission was obtained from the hospital authorities prior to data collection. A total of 100 staff nurses working in maternity and neonatal units were selected using purposive sampling technique based on the inclusion criteria.Data were collected over a period of four weeks using a structured knowledge questionnaire consisting of two sections: demographic variables and questions related to warm chain practices. After obtaining informed consent, a pre-test was conducted using the questionnaire. On the same day, video assisted teaching on warm chain practices was administered in group sessions using standardized educational videos. The post-test was conducted on the 15th day using the same questionnaire to assess the effectiveness of the intervention.

The collected data were analyzed using descriptive and inferential statistics. Frequency, percentage, mean, and standard deviation were used for descriptive analysis, while paired 't' test was applied to determine the effectiveness of video assisted teaching and chi-square test was used to find the association between pre-test knowledge scores and selected demographic variables. A level of significance of $p < 0.05$ was considered statistically significant.

## Results:-

**Demographic Characteristics:**The present study included 100 staff nurses working in selected hospitals of Coimbatore. With regard to demographic characteristics, most of the staff nurses were in the age group of 21–25 years (32%) and were female (67%). In terms of educational qualification, the majority had B.Sc. Nursing (37%), followed by Diploma in Nursing (29%). Nearly half of the participants were unmarried (46%). Most of the staff nurses belonged to the Hindu religion (42%) and preferred Tamil as the language of communication (46%). Regarding professional experience, 36% of the staff nurses had 4–6 years of total clinical experience, while 33% had 4–6 years of experience in NICU. Only 21% of the staff nurses reported having previously received training related to neonatal thermoregulation or warm chain practices.

**The frequency and percentage distribution of staff nurses according to their pre-test and post-test level of knowledge regarding warm chain practices on prevention of hypothermia in newborn.**

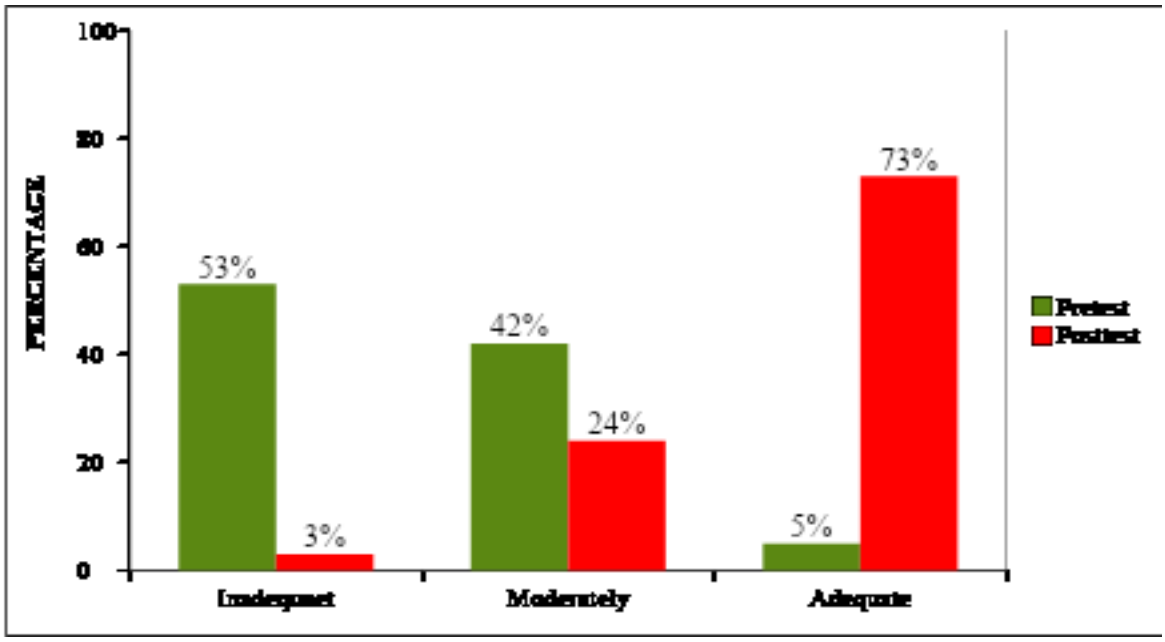



**Figure 1** depicts the frequency and percentage distribution of staff nurses according to their pre-test and post-test level of knowledge regarding warm chain practices on prevention of hypothermia in newborn. During the pre-test, 53% of the staff nurses had inadequate knowledge, 42% had moderately adequate knowledge, and only 5% had adequate knowledge. In contrast, the post-test results showed that only 3% had inadequate knowledge, 24% had moderately adequate knowledge, and a majority of 73% had adequate knowledge, indicating a substantial improvement in knowledge following video assisted teaching.

**Comparison of pre-test and post-test knowledge scores to assess the effectiveness of video-teaching (n=100)**

| S. No | Knowledge | Mean | S.D | Mean Differences | 't' value |
|---|---|---|---|---|---|
| 1. | Pre test | 5.9 | 1.4 | 10 | 33 |
| 2. | Post test | 15.8 | 3 | | |

***Significant at p<0.05 level**

Table 1 presents the comparison of pre-test and post-test knowledge scores. The mean pre-test knowledge score was 5.9 ± 1.4, which increased to 15.8 ± 3 in the post-test. The mean difference was 10. The calculated 't' value was 33, which was statistically significant at $p < 0.05$. This finding indicates that video assisted teaching was highly effective in improving knowledge regarding warm chain practices on prevention of hypothermia in newborn among staff nurses. Hence, the research hypothesis (H1) was accepted.

**Association between pre-test level of knowledge and selected demographic variables. (n=100)**

| S. No | Demographic Variables | Level of Knowledge | | | $\chi^2$ | Table value (df) |
|---|---|---|---|---|---|---|
| | | Adequate | Moderately | Inadequate | | |
| | **Age** | | | | | |
| | (a) 21–25 years | 3 | 20 | 9 | 15.48* | 12.59 |
| | (b) 26–30 years | 2 | 9 | 15 | | (6) |
| | (c) 31–35 years | 0 | 7 | 11 | | |
| | (d) Above 36 years | 0 | 6 | 18 | | |
| 2. | **Sex** | | | | | |
| | (a) Male | 4 | 28 | 35 | 0.42 | 5.99 |
| | (b) Female | 1 | 14 | 18 | | (2) |
| 3. | **Highest Level of Nursing Education** | | | | | |
| | (a) Diploma in Nursing | 2 | 11 | 16 | | |
| | (b) B.Sc Nursing | 2 | 14 | 21 | 5.35 | 12.59 |
| | (c) Post Basic B.Sc Nursing | 0 | 13 | 8 | | (6) |
| | (d) M.Sc Nursing | 1 | 4 | 8 | | |
| 4. | **Marital Status** | | | | | |
| | (a) Married | 3 | 14 | 24 | 6.7 | 12.59 |
| | (b) Unmarried | 1 | 21 | 24 | | (6) |
| | (c) widows | 1 | 3 | 1 | | |
| | (d) Separated | 0 | 4 | 4 | | |
| 5. | **Religion** | | | | | |
| | a. Hindu | 3 | 15 | 24 | 6.06 | 12.59 |
| | b. Muslim | 2 | 9 | 12 | | (6) |
| | **c.** Christian | 0 | 15 | 12 | | |
| | **d.** Others | 0 | 3 | 5 | | |
| 6. | Preferred Language for Communication | | | | | |
| | a) Tamil | 0 | 21 | 25 | | |
| | (b) English | 2 | 9 | 16 | 6.45 | 12.59 |
| | (c) Hindi | 2 | 7 | 6 | | (6) |
| | (d) Others | 1 | 5 | 6 | | |
| 7. | Total Years of Clinical Experience | | | | | |
| | (a) Less than 1 year | 1 | 8 | 9 | | |
| | (b) 1–3 years | 1 | 7 | 6 | 1.97 | 12.59 |
| | (c) 4–6 years | 1 | 16 | 19 | | (6) |
| | (d) More than 6 years | 2 | 11 | 19 | | |
| 8. | Years of Experience in NICU | | | | | |
| | (a) Less than 1 year | 2 | 6 | 12 | | |
| | (b) 1–3 years | 0 | 11 | 8 | 15.6* | 12.59 |
| | (c) 4–6 years | 3 | 12 | 18 | | (6) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | (d) More than 6 years | 0 | 13 | 15 | | |
| 9. | Have you previously received any training related to neonatal thermoregulation or warm chain practices?<br>(a) Yes<br>(b) No | 1<br>4 | 7<br>35 | 13<br>40 | 1.16 | 5.99<br>(2) |

Table 2 shows the association between pre-test level of knowledge and selected demographic variables. A statistically significant association was found between knowledge scores and age ($\chi^2 = 15.48$) and years of experience in NICU ($\chi^2 = 15.6$). No significant association was observed between knowledge scores and other demographic variables such as sex, highest level of nursing education, marital status, religion, preferred language for communication, total years of clinical experience, and previous training related to neonatal thermoregulation or warm chain practices. Therefore, the research hypothesis (H2) was partially accepted.

## Discussion:-

The findings of the present study demonstrated that video assisted teaching was effective in improving the knowledge of staff nurses regarding warm chain practices on prevention of hypothermia in newborn. A marked increase was observed in the post-test knowledge scores compared to the pre-test scores, indicating that structured educational intervention significantly enhanced the understanding of warm chain principles among staff nurses.

The improvement in knowledge observed in this study is consistent with the findings of earlier studies conducted on neonatal thermoregulation and warm chain practices. Studies by Rupa A. Varma (2020) and Sam (2023) reported that structured teaching programs and educational interventions significantly improved nurses' knowledge and compliance with warm chain practices. The present study further supports the effectiveness of video assisted teaching as a learning strategy, as visual and audio reinforcement enhances comprehension and retention of information.

The association between knowledge scores and age suggests that maturity and professional exposure may contribute to better understanding of neonatal care practices. Similarly, the significant association between knowledge and years of experience in NICU indicates that practical experience plays an important role in acquiring knowledge related to neonatal thermoregulation. Staff nurses with more experience in NICU settings were found to have better baseline knowledge compared to those with lesser experience.However, no significant association was found between knowledge and variables such as sex, educational qualification, marital status, religion, preferred language, total years of clinical experience, and previous training related to neonatal thermoregulation. This finding highlights the need for regular and standardized in-service education programs for all staff nurses, irrespective of their background characteristics. The low proportion of staff nurses who had previously received training (21%) further emphasizes the necessity for continuous professional development programs focusing on warm chain practices.

Overall, the results of the present study confirm that video assisted teaching is a simple, cost-effective, and efficient method for improving knowledge regarding warm chain practices among staff nurses. Implementing regular educational interventions in hospital settings may help reduce the incidence of neonatal hypothermia and improve neonatal outcomes.

## Conclusion:-

The study was conducted to determine the effectiveness of warm chain practices on prevention of hypothermia in newborn among staff nurses. The pre-test mean score for knowledge was 5.9, with a standard deviation of 1.4 and the post-test mean score was 15.8, with a standard deviation of 3. The mean difference was 10. The calculated 't' value was 33, indicating statistical significance at $p < 0.05$. From the result of the study it was concluded that video assisted teaching has significant effect on the improvement of knowledge regarding warm chain practices on prevention of hypothermia in newborn among staff nurses.

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